

Using the Smart Ringswitch Gigabit Module

Smart Ringswitch Software Release 4.3

Before you start

About this guide

This guide is an addendum to the *Smart Ringswitch Family User Guide* (part number 100-291) which describes how to use Madge Networks' Smart Ringswitch Gigabit Module with a Madge Ringswitch and Ringswitch Software Release 4.2. This guide reflects the latest release of the Ringswitch Software (4.3).

Conventions

Throughout this guide, the term Ringswitch is used to refer to any Madge Ringswitch model.

Associated guides

This guide tells you how to configure the Smart Ringswitch Gigabit Module. For information about installing a Ringswitch and its associated modules, refer to *Getting Started: Smart Ringswitch Family* (part number 100-315). For information about configuring a Ringswitch and its associated modules, refer to the *Smart Ringswitch Family User Guide* (part number 100-291).

Audience

This guide is for network administrators. It assumes you are familiar with:

- token-ring networking
- the principles of LAN bridging and token-ring switching

Safety

To make sure you do not injure yourself or damage your Madge product, read *Madge Networks Safety Guidelines* (part number 102-002) before installing the product.

The guide

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Notes, cautions, and warnings



Note: A note icon indicates information that you should observe.



Caution: A caution icon indicates the possibility of damage to data or equipment.



Warning: A warning icon indicates the possibility of a threat to personal safety.

Acknowledgments

Madge, the Madge Logo, Ring Access Module, Ringhub, Smart Ringswitch, Smart Ringswitch Plus, Smart Ringswitch Express, HSTR Ready, GroupSwitch, Smart CAU, Smart RAM STP, Smart RAM Plus UTP, Smart LAM STP, Smart LAM Plus UTP, Smart Ringbridge, TrueView, and TrueView/32 are trademarks, and in some jurisdictions may be registered trademarks, of Madge Networks or its affiliated companies. Other trademarks appearing in this document are the property of their respective owners.

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Introduction to the Smart Ringswitch Gigabit Module

The Smart Ringswitch Gigabit Module is an option module that supports Gigabit Ethernet connections at 1000 Mbps.

Features of the Smart Ringswitch Gigabit Module

The following sections introduce features of the Gigabit Module:

- Connection to Gigabit LAN segments
- Jumbo frame size support
- Token ring to Ethernet translational bridging support

Connection to Gigabit LAN segments

If you install a Smart Ringswitch Gigabit Module into a Smart Ringswitch Plus Chassis or a Smart Ringswitch Express you can connect token ring LAN segments with Gigabit Ethernet LAN segments.

For more information about the Smart Ringswitch Gigabit Module, see Chapter 2, Connecting the Smart Ringswitch Gigabit Module.

Jumbo frame size support

Jumbo frame support lets you transmit frames onto Gigabit Ethernet greater than 1514 bytes (standard Ethernet). Sizes up to 9014 bytes (Jumbo Ethernet) are supported. Larger frame sizes improve performance and let standard token ring traffic bridge to Gigabit Ethernet without fragmentation.

Token ring to Ethernet translational bridging support

The Smart Ringswitch Gigabit Module supports multi-protocol translational bridging including IPX, IP, NLP, RIP, SAP, NDS and AppleTalk. See Appendix F of the *Smart Ringswitch Family User Guide* (part number 100-291) for more information on translational bridging.

The Smart Ringswitch Gigabit Module also introduces support for Novell NetWare Link Services Protocol (NLSP). NLSP provides link-state routing for Internetwork Package Exchange (IPX) networks and replaces NetWare's IPX-based Routing Information Protocol (RIP) and Service Advertising Protocol (SAP). As token ring and Ethernet use different addressing formats, the Smart Ringswitch Gigabit Module recognizes NLSP traffic and translationally bridges some NLSP frames to maintain consistent routing information throughout the enterprise IPX network.

About Smart Ringswitch Software Release 4.3

This user guide describes how to use the Smart Ringswitch Gigabit Module with Ringswitch Software Release 4.3. Download the microcode software provided with Software Release 4.3 to the Ringswitch to support the Smart Ringswitch Gigabit Module. Refer to the *Smart Ringswitch Family User Guide* (part number 100-291) for more detailed information about the Smart Ringswitch software.

This section describes how to identify the boot code and run-time microcode files corresponding to this software release and explains how to identify the type of Switch Module that is installed in a Ringswitch.

Features supported by Software Release 4.3

Ringswitch Software Release 4.3 supports the Smart Ringswitch Plus Chassis and the Smart Ringswitch Express and introduces support for the Smart Ringswitch Gigabit Module.



Note: To identify files containing boot code and run-time microcode, examine the first four letters in the filename, shown in Table 1.1. The remaining filename characters denote software version numbers. Refer to the README.TXT on the accompanying CD for the most up-to-date information about version numbers.

Upgrading Ringswitch microcode

Multi-Download is a feature that Madge provides in Ringswitch software Release 3.3 and later. Multi-Download simplifies Ringswitch software upgrades by combining downloadable files into a single file that supports all Ringswitches and available modules.

To upgrade your Ringswitch microcode, download the latest runtime microcode (this enables your Ringswitch for Multi-Download and makes it aware of any new Ringswitch hardware) and then download the Multi-Download file to upgrade your Ringswitch. Follow the instructions below to upgrade your Ringswitch:

- 1 Upgrade the TrueView Ringswitch manager. The latest version is on the accompanying CD. For information about installing and using TrueView Ringswitch Manager, refer to the TrueView online help or the booklet accompanying the Smart Ringswitch Software CD.
- 2 Upgrade the TrueView Ringswitch manager by running the downloaded file and following the on-screen instructions.
- 3 Power-off the Ringswitch and ensure the Smart Ringswitch Gigabit Module is installed in the correct slot of the Ringswitch. For information about installing the Smart Ringswitch Gigabit Module, refer to *Getting Started: Smart Ringswitch Family* (part number: 100-315).
- 4 Power-on the Ringswitch.
- 5 In TrueView, select “Upgrade code”. To do this, right-click on the red download button on the Ringswitch dialog box and select “Upgrade code”. This automatically downloads all the files that your Ringswitch needs for all installed modules. The Ringswitch will automatically re-boot as part of the upgrade process. When download is complete, you see the message “Upgrade Completed” in the Download Status dialog.

Table 1.1 Ringswitch software modules in Release 4.3

Microcode module	Switch module/Ringswitch	Filename	Versions
Run-time	Switch-3 Module	SRPW43xR.BIN	4.3x
Multi-Download file	Switch-3 Module	REL4_3.BIN	4.3

Connecting the Smart Ringswitch Gigabit Module

The Smart Ringswitch Gigabit Module lets you connect your Ringswitch to a Gigabit Ethernet network. The Translation Bridging solution provided in the Ringswitch allows for “any to any” connectivity letting Gigabit Ethernet and token-ring end-stations talk directly without requiring any special drivers in these end-stations. You can install the Smart Ringswitch Gigabit Module into one of the bottom three Option Module Slots of a Smart Ringswitch Plus Chassis, or in the Option Module Slot of the Smart Ringswitch Express.

Connecting ports

The Smart Ringswitch Gigabit Module has one Gigabit Ethernet port with an SC fiber connector. You can connect a Gigabit Ethernet port to any Gigabit Ethernet interface.

Table 2.1 Physical specification for the Smart Ringswitch Gigabit Module

Fiber Interface	Ethernet/IEEE 802.3z and 802.3x	
	1000BASE-SX	1000BASE-LX (only when using an outboard SX to LX converter)
Cable Type	50 μ or 62.5 μ Multimode Fiber (MMF)	Singlemode Fiber (SMF) (with SX->LX converter module to 50/62.5 μ MMF)
Connectors	SC Fiber	SC Fiber
Port Attributes	Auto-Negotiation Flow Control, Full Duplex	Auto-Negotiation Flow Control, Full Duplex
Port Speed	1000Mbit/s	1000Mbit/s
Recommended Maximum Cable Length	220m (62.5/125 μ MMF) or 500m (50/125 μ MMF)	500m (62.5/125 μ and 50/125 μ MMF) or 5km (10 μ SMF)

Connecting a Smart Ringswitch Gigabit Module to any Gigabit Ethernet device

The Smart Ringswitch Gigabit Module can connect to any Gigabit Ethernet device with SC fiber connectors. Use either MultiMode fiber (SX) or SingleMode fiber (LX) according to Table 2.1. (SingleMode fiber is only supported when using a separate outbound SX to LX converter.)



Note: Support for LX requires a separate outboard SX to LX converter. Check that the converter supports extended format frames (many converters do not support over 4K frames). Madge is currently testing third-party converters and details will be available on the Madge.connect website - www.madgeconnect.com.

Port interface attributes

The Smart Ringswitch Gigabit Module's port speed is always 1000 Mbps and always set to full duplex. These settings cannot be changed.

Flow control

The default setting for flow control is "Auto". This means the port will negotiate with the connected device for the best setting supported by both ends. You can also set the Gigabit port to "No flow control", "Tx only", "Rx only", or "Tx and Rx".

Jumbo frame size support

The default setting is "1514 bytes (standard Ethernet)". If the connected device supports larger frame sizes, you can configure this setting to either "4.5K (Ringswitch token ring)" or "9014 bytes (Jumbo Ethernet)".



Note: The "9014 bytes (Jumbo Ethernet)" frame setting is only available if the Ringswitch is in 18K mode. See the *Smart Ringswitch Family User Guide* (part number 100-291) for more information on adjusting Ringswitch settings.

Troubleshooting

For information about using TrueView Ringswitch Manager, refer to the booklet accompanying the Ringswitch CD. Also see the *Smart Ringswitch Family User Guide* (part number 100-291) for detailed Ringswitch troubleshooting information and generic LCD messages.



Warning: The Smart Ringswitch Gigabit Module does not contain any user-serviceable components. Do not open the Ringswitch unit except when installing a module.

Troubleshooting messages on the LCD panel

When a Ringswitch re-boots, the LCD displays alert messages and information about installed modules.

Press the paddle switch *downwards* to display information about each of the installed modules. Information about each of the modules is displayed in the order they are inserted into the chassis, reading from top to bottom. Click the paddle switch *upwards* to display more detailed individual port information about the currently selected module. If no specific message is given, contact your customer service representative quoting any error number displayed.

If the module is functioning correctly, the LCD will display the slot number, module type, and microcode version of the selected module, as shown in the following table.

Table 2.2 The LCD message displayed by a correctly functioning Smart Ringswitch Gigabit Module

Message	Description
Slot <n> Gigabit Rev xx.xx.xx	Correctly functioning Smart Ringswitch Gigabit Module

Reading status indicators

The Smart Ringswitch Gigabit Module indicates status information on its LEDs and displays information on its LCD. Alternatively, view the LEDs and LCD display from the management station, by running TrueView Ringswitch Manager. For more information on how to run the TrueView Ringswitch Manager, refer to the booklet accompanying the Smart Ringswitch Software CD.

Also refer to the *Smart Ringswitch Family User Guide* (part number 100-291) for more information about Ringswitch LEDs.

Reading Gigabit Module port LEDs

The Gigabit Module port has two LEDs that indicate the status and mode. The upper LED displays the information in Table 3.1.

Table 3.1 Upper LED states for Gigabit Module ports

LED state	Description
yellow	The Gigabit port is enabled but the link is down
green	The Gigabit port is enabled and a link has been established
off	The Gigabit port is disabled

The lower LED is either yellow or off, depending whether the Gigabit port is open or closed.

Reading the LCD

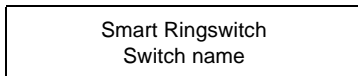
View information about the status of the Ringswitch from the LCD display on its front panel. This section only describes the basic Ringswitch LCD messages and those that relate to the Smart Ringswitch Gigabit Module. See the *Smart Ringswitch Family User Guide* (part number 100-291) for more information on Ringswitch LCD messages.

Reading status messages on the LCD panel

The Ringswitch has an LCD panel that shows status messages and alert messages that indicate changes in the status of the Ringswitch and each of the ports.

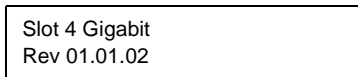
Press the paddle switch downwards to display information about each of the installed Ringswitch modules, including the Smart Ringswitch Gigabit Module. The LCD displays information about the modules in the order they are inserted into the Ringswitch chassis. Click the paddle switch upwards to display more detailed individual port information about the currently selected module.

The default LCD screen displays the name of the Ringswitch which represents the switch module:



Smart Ringswitch
Switch name

Press the paddle down to display information about the first Ringswitch slot. The LCD screen displays the number of the slot, the type of module installed, and the hardware version number.



Slot 4 Gigabit
Rev 01.01.02

Continue pressing the down paddle to display information about each of the Ringswitch modules. Once information about all of the slots has been displayed, the LCD screen will display the Ringswitch name again.

LCD status messages for the Smart Ringswitch Gigabit Module

The LCD panel displays additional status messages for the Smart Ringswitch Gigabit Module. Status messages for the Gigabit port provide detailed information about the status and operation of the port. To display this information, press the paddle down until the LCD screen displays the Smart Ringswitch Gigabit Module's name. Then press the paddle up to provide detailed information about the Gigabit port on the Smart Ringswitch Gigabit Module. The Gigabit port status messages that the LCD panel displays are described in Table 3.2.

Table 3.2 Gigabit port status messages on the LCD panel

Message	Description	
Slot <n> XXX Rev 0?	XXX	The location of the card, what the card is, and the hardware revision number
6:1 SR=3EE/FwdS TB=Disa (49) Open Lk:Up ARxP	6:1	The slot and port number of the Gigabit port
	SR=3EE/FwdS	The forwarding mode, number of the ring attached to the port, and the source routing status
	TB=Disa	The transparent status of the port
	(49) Open	The 'total' port number and interface mode (see Table 3.3)
	Lk:Up ARxP	The port link status and the port mode status (see Table 3.4)

Table 3.3 Gigabit port interface modes

Message	Description
Closed	The port is closed
Open	The port is open
Fault	The port has detected a fault while trying to open/close
Lk:Up	The link is up. That is, the port has detected another Gigabit Ethernet interface when it is in an open state
Lk:Down	The link is down. The port has failed to detect another Gigabit Ethernet interface while open

Table 3.4 Gigabit port mode status

Message	Description
A	Auto negotiation mode
F	Forced negotiation mode
NoP	No PAUSE frames – no flow control
TxP	Transmit only PAUSE frames
RxP	Receive only PAUSE frames
TRxP	Transmit and receive PAUSE frames

Alert messages on the LCD panel

Alerts are informative messages that appear on the LCD panel of a Ringswitch for two seconds. They temporarily override the normal display. Alerts indicate events such as a port failing to open. When you use the paddle switch to view the Ringswitch LCD screens, the alerts are disabled for ten seconds to allow you to read the LCD screens without the display being interrupted by an alert.

See the *Smart Ringswitch Family User Guide* (part number 100-291) for lists of generic Ringswitch LCD alert messages.

Using the command line interface

Refer to the *Smart Ringswitch Family User Guide* (part number 100-291) for information about setting up Ringswitch serial ports, telnet sessions and generic commands to use the command line interface. The *Smart Ringswitch Family User Guide* also contains a reference of all Ringswitch and option module command lines.

Configuring the Smart Ringswitch Gigabit Module

If you have a Smart Ringswitch Gigabit Module installed, you can use the following commands to configure the card.

Setting the Gigabit port IPX mode

The set gigabit port IPX mode command enables or disables the translational bridging of IPX frames.

Command:	>set Gigabit port IPX mode <slot>:<port> <1,2>	
Parameter:	slot	Slot number
	port	Port number
	1	Enable
	2	Disable

Setting the Gigabit port token-ring IPX encapsulation mode

The set gigabit port TRN IPX encapsulation mode command sets the encapsulation type on token ring for all IPX frames forwarded from Gigabit Ethernet.

Command: >set Gigabit port TRN IPX encapsulation mode <slot>:<port> <1,2,3>

Parameter:	slot	Slot number
	port	Port number
	1	Auto
	2	IEEE8022
	3	SNAP

Setting the Gigabit port Ethernet IPX encapsulation type

The `set gigabit port ETH IPX encapsulation type` command sets the encapsulation type on Ethernet for all IPX frames forwarded from token ring.

Command: `>set Gigabit port ETH IPX encapsulation type <slot>:<port> <1,2,3,4,5>`

Parameter:	slot	Slot number
	port	Port number
	1	Auto
	2	IEEE8022
	3	SNAP
	4	IEEE8023
	5	Ethernet II (DIX)

Setting the Gigabit port IPX address

The `set gigabit port IPX address` command specifies the IPX network number for the port. If this is zero then the IPX network number is learned automatically by the Gigabit port.

Command: `>set Gigabit port IPX address <slot>:<port> <number>`

Parameter:	slot	Slot number
	port	Port number
	number	IPX network number

Setting the Gigabit port IP mode

The `set gigabit port IP mode` command enables or disables the translational bridging of IP frames.

Command: `>set Gigabit port IP mode <slot>:<port> <1,2>`

Parameter:	slot	Slot number
	port	Port number
	1	Enable
	2	Disable

Setting the Gigabit port IP Multicast mode

The `set gigabit port IP multicast mode` command specifies the type of MAC address to be used for all IP multicast frames received on Gigabit which will be forwarded onto token ring.

Command: `>set Gigabit port IP multicast mode <slot>:<port> <1,2,3>`

Parameter:	slot	Slot number
	port	Port number
	1	Broadcast
	2	Functional
	3	Group

Setting the Gigabit port flow negotiation mode

The `set gigabit port flow negotiation mode` command specifies the way the Gigabit Module negotiates flow control with a connecting device.

Command: `>set Gigabit port flow negotiation mode <slot>:<port> <1,2,3,4>`

Parameter:	slot	Slot number
	port	Port number
	1	None
	2	Tx only
	3	Rx only
	4	Tx and Rx

Setting the Gigabit port auto negotiate mode

The set gigabit port auto negotiate mode command lets you enable or disable auto negotiation between the Gigabit Module and a connecting device.

Command: >set Gigabit port auto negotiate mode <slot>:<port> <1,2>

Parameter:	slot	Slot number
	port	Port number
	1	Enable
	2	Disable

Setting the Gigabit port max frame size

The `set gigabit port max frame size` command specifies the maximum frame size supported across the Gigabit Module.

Command:	<code>>set Gigabit port max frame size <slot>:<port> <1,2,3></code>	
Parameter:	slot	Slot number
	port	Port number
	1	1514 bytes (Ethernet)
	2	4486 bytes (Ringswitch token ring)
	3	9014 (Jumbo Ethernet)

Setting the Gigabit port VLAN tagging mode

The `set gigabit port VLAN tagging mode` command enables or disables the 802.1p priority tagging of frames onto Gigabit Ethernet.

Command:	<code>>set Gigabit port VLAN tagging mode <slot>:<port> <1,2></code>	
Parameter:	slot	Slot number
	port	Port number
	1	Enable
	2	Disable

Setting the Gigabit port VLAN identity

The `set gigabit port VLAN ID` command sets the Gigabit port VLAN identity. For this command to take effect, you must have already enabled VLAN 802.1p priority tagging on the selected port.

Command:	<code>>set Gigabit port VLAN ID <slot>:<port> <number></code>	
Parameter:	slot	Slot number
	port	Port number
	number	VLAN ID

Setting the Gigabit Spanning Tree encapsulation mode

The set gigabit port STP encapsulation mode command enables or disables the process of encapsulating BPDUs from Gigabit Ethernet when they are forwarded onto token ring, and de-encapsulating BPDUs when they are forwarded from token ring onto Gigabit Ethernet.

Command:	>set Gigabit port STP encapsulation mode <slot>:<port> <1,2>	
Parameter:	slot	Slot number
	port	Port number
	1	Enable
	2	Disable

Clearing the Gigabit port RIF Cache

The set gigabit port RIF cache cleared command deletes the RIF cache for the specified Gigabit port. The cache is used when translating transparently forwarded Gigabit Ethernet frames to source-routed token ring frames.

Command:	>set Gigabit port RIF cache cleared <slot>:<port> <1>	
Parameter:	slot	Slot number
	port	Port number
	1	Clear

Displaying Gigabit port information

The `show gigabit port information` command displays all relevant Gigabit port information, including the outcome of any Auto mode settings when a Gigabit Ethernet link is established.

Command: `>show Gigabit port information <slot>:<port>`

Parameter: `slot` Slot number

`port` Port number

Other port functions

All other port functions are covered in the *Smart Ringswitch Family User Guide* (part number 100-291) in the section on using the command line interface.

Current ratings

Use the information in this section to ensure that the sum of the current ratings for the modules you install does not exceed the maximum permitted for your Smart Ringswitch. Refer to the *Smart Ringswitch Family User Guide* (part number 100-291) for all Ringswitch chassis current ratings and current ratings for all option modules.

Gigabit Module current ratings

Table A.1 Current ratings for the Smart Ringswitch Gigabit Module

Module	Circuit board i.d. number	Metal carrier i.d. number	Maximum +5V dc load	Maximum +12V dc load
Smart Ringswitch Gigabit Module SX	158-068-xx	Gigabit SX 200	2.5A	0.25A

Technical support services

World Wide Web (WWW)

To access the Madge Networks service on the web, use either a web browser or FTP software.

Using a web browser

To access the full home page service, enter the URL:

<http://www.madgeconnect.com>

Using FTP software

If you do not have a web browser, you can still download new or updated software by using FTP software.

If you use FTP software:

- 1 Connect to <ftp.madge.com>
- 2 The system prompts you for your login name.
Type ANONYMOUS
- 3 The system prompts you for a password.
Type your full email address.
- 4 Once this is complete, you can issue file transfer commands.

Telephone, fax, and email

Region	Support service	Support number
Europe, Middle East, Africa	Telephone	+44 1753 661952
	Email	Lan.Support.Europe @vital-ns.com
Americas	Telephone	+1 800 654 2661
	Email	Lan.Support.US @vital-ns.com
Asia/Pacific	Telephone	+61 2 9936 1711/1721
	Email	Lan.Support.AsiaPac @vital-ns.com

Toll-free regional support numbers

Country	Number
Americas	+1 800 654 2661
Austria	0800 298 366
Belgium	0800 10485
China	10 800 610 0112
Denmark	8001 7649
Finland	0800 118 074
France	0800 90 82 50
Germany	00 800 8688 2800
Hong Kong (toll free to Australia)	800 933 127
Indonesia	00 180 361403
Israel	177 440 2530
Italy	800 872 092
Malaysia	1 800 80 1716
Netherlands	0800 022 7120

Country	Number
New Zealand	+0800 44 5398
Norway	800 11759
Philippines	1 800 1611 0108
Portugal	0505 44 4602
Singapore	800 6161 459
South Africa	0800 991013
South Korea	00 79 8611 4025
Spain	900 97 4412
Sweden	020 793 127
Switzerland (<i>French</i>)	0800 55 6432
Switzerland (<i>German</i>)	0800 55 1057
Taiwan	00 8061 1250
Thailand	001 800 611 4022
United Kingdom	0345 125539*

* Indicates local telephone numbers where the calls are charged at the normal rate

